

CLAIMS

1. An exhaust purifying apparatus for an internal combustion engine, wherein the apparatus estimates an accumulation amount of particulate matter trapped about a catalyst in an exhaust system, and wherein, when the estimated accumulation amount is equal to or more than a permissible value, the apparatus executes PM elimination control for supplying unburned fuel component to the catalyst to increase the temperature of the catalyst and burning the trapped particulate matter, and sets the estimated accumulation amount to zero at the completion of the PM elimination control,

the apparatus being **characterized in that:**

when execution of the PM elimination control becomes possible after suspension of the control, the apparatus resumes the PM elimination control even if the accumulation amount of particulate matter about the catalyst is less than the permissible value.

2. The exhaust purifying apparatus according to claim 1, **characterized in that**, when resuming the PM elimination control, the smaller the accumulation amount, the shorter the time for execution of the PM elimination control is set by the apparatus.

3. The exhaust purifying apparatus according to claim 1 or 2, **characterized in that** at a final stage of the PM elimination control, the apparatus executes burn-up control, in which performance and stopping of concentrated intermittent fuel addition to a section of the exhaust system that is upstream of the catalyst are repeated a predetermined number of times.

4. The exhaust purifying apparatus according to claim 1 or 2, **characterized in that**, when the estimated accumulation

amount is less than a determination value that is slightly more than zero, the apparatus executes burn-up control, in which performance and stopping of concentrated intermittent fuel addition to a section of the exhaust system that is upstream of the catalyst are repeated a predetermined number of times.

5 5. The exhaust purifying apparatus according to any one of claims 1 to 4, **characterized in that** the apparatus
10 discretely increases the temperature of the catalyst after resuming the PM elimination control.

6. The exhaust purifying apparatus according to claim 5, **characterized in that** the apparatus:

15 burns unburned fuel collected on the catalyst in an early stage of the increase in the catalyst temperature; and
 further increasing the catalyst temperature thereafter, thereby burning particulate matter collected on the catalyst.

20 7. An exhaust purifying method for an internal combustion engine, the method comprising:

 estimating an accumulation amount of particulate matter trapped about a catalyst in an exhaust system of the internal combustion engine;

25 executing PM elimination control when the estimated accumulation amount is equal to or more than a permissible value, in which control, unburned fuel component is supplied to the catalyst to increase the temperature of the catalyst and the trapped particulate matter is burned; and

30 setting the estimated accumulation amount to zero at the completion of the PM elimination control,

 the method being **characterized by**:

 resuming the PM elimination control when execution of the PM elimination control becomes possible after suspension of
35 the control, even if the accumulation amount of particulate

matter about the catalyst is less than the permissible value.

8. The method according to claim 7, **characterized in that**, when the PM elimination control is resumed, the smaller
5 the accumulation amount, the shorter the time for execution of the PM elimination control is set.

9. The method according to claim 7 or 8, **characterized in that** at a final stage of the PM elimination control, burn-up
10 control is executed, in which performance and stopping of concentrated intermittent fuel addition to a section of the exhaust system that is upstream of the catalyst are repeated a predetermined number of times.

15 10. The method according to any one of claims 7 to 9, **characterized in that** the temperature of the catalyst is discretely increased after the PM elimination control is resumed.